



THE MARYLAND HOUSE OF DELEGATES
ANNAPOLIS, MARYLAND 21401

**Testimony in SUPPORT of HB 1143: Public Health - Office of the Chief Medical Examiner
- Perinatal Autopsies (Lung Float Test Ban)**

Summary: HB 1143 addresses a critical gap in forensic and legal practice by prohibiting the use of the hydrostatic lung float test as a sole determinant of live birth in criminal investigations. Scientific evidence demonstrates that the presence of air in the lungs does not reliably indicate sustained extra-uterine life, effective circulation, or independent physiological function, and can result from decomposition, resuscitation, or passive air entry. The test lacks standardized procedures for tissue handling, flotation methods, and interpretation, meaning results can vary widely between examiners, offices, and jurisdictions. By requiring determinations of live birth to rely on comprehensive, evidence-based evaluations, this bill aligns Maryland law with modern forensic standards, safeguards the integrity of legal outcomes, and reduces the risk of wrongful or scientifically unsupported conclusions.

Overview: When criminal liability hinges on proving a live birth, the science must demonstrate sustained life, not simply the presence of air in the lungs. Our evidentiary standards must reflect modern medical understanding and protect against conclusions that can be drawn from findings with multiple possible explanations.

In practice, the hydrostatic lung float test is often used alongside other postmortem observations to determine whether air is present in the lungs. From that finding, investigators may infer that a live birth occurred and then proceed to assign a cause of death, such as asphyxia or exposure. However, the presence of air alone does not establish effective circulation, duration of survival, or independent physiological function. Because lung aeration can result from multiple mechanisms unrelated to sustained life after delivery, including decomposition, resuscitative efforts, or passive air entry, using it as a foundational step in determining live birth, and then inferring a cause of death, creates a significant risk of conclusions that extend beyond what the science can reliably support.

Importantly, there are no universally accepted scientific or legal standards governing how the hydrostatic lung float test is performed. Critical variables—including the handling and preparation of lung tissue, the type and temperature of liquid used for flotation, the duration of submersion, and interpretation of partial or uneven floating—are not standardized across laboratories or medical examiner offices. As a result, the test can yield different results depending on who conducts it, where it is conducted, and the specific procedures followed. This



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lack of standardization has been repeatedly highlighted in forensic literature and investigative reporting, which note that variations in technique can significantly influence whether lungs float and, consequently, whether live birth is inferred. This inconsistency further undermines the reliability of the lung float test as evidence in legal proceedings.

Modern forensic guidance emphasizes that determinations of live birth require evidence of sustained extra-uterine physiological function, such as effective respiration with circulation, evaluated through a comprehensive, multidisciplinary assessment. [Authoritative guidance from the National Association of Medical Examiners](#) states that investigations of fetal and early neonatal deaths should rely on multiple lines of evidence, including scene investigation, medical history, placental examination, and full autopsy findings, rather than any single test with known limitations

Independent medical experts and human rights organizations have similarly cautioned against the continued use of lung flotation as proof of live birth. [Physicians for Human Rights explains](#) that the presence of air in lung tissue does not establish sustained extra-uterine life and should not be treated as dispositive evidence in forensic determinations, particularly where criminal liability may follow.

[A national investigation by ProPublica](#) documents decades of scientific criticism of the test, including the potential for false positives and the absence of consensus that lung aeration demonstrates live birth. The reporting further highlights that medical examiners and courts have increasingly questioned the reliability of the test when used in isolation or as a determinative factor in criminal cases.

The scientific concerns are longstanding. Forensic literature has repeatedly emphasized that lung flotation cannot distinguish between air introduced through respiration and air introduced through postmortem processes. Classic and contemporary forensic pathology texts note that putrefaction gases can cause lung tissue to float even in cases of intrauterine death, and that mechanical ventilation or handling can introduce air without sustained life. These limitations are precisely why current professional standards favor holistic medical evaluation over single-test determinations.

HB 1143 brings Maryland law into alignment with modern forensic practice by ensuring that determinations of live birth—and the serious legal consequences that follow—rest on methods



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that demonstrate sustained physiological function. By clarifying evidentiary standards, the bill advances three critical goals:

- **Scientific integrity:** It aligns legal determinations with current medical consensus and evidence-based investigative practices.
- **Justice and reliability:** It reduces the risk that ambiguous biological findings will be interpreted beyond their scientific limits in criminal proceedings.
- **Public confidence:** It strengthens trust that Maryland's forensic and legal systems rely on clear, validated methods when liberty is at stake.

Our goal is straightforward: ensure that determinations of live birth rest on evidence of sustained life, not on findings that can reflect multiple possibilities. HB 1143 provides that clarity and safeguards both scientific rigor and due process.

Conclusion: HB 1143 advances a straightforward and essential principle: determinations of live birth, and the profound legal consequences that follow, must rest on methods that demonstrate sustained life, not on findings that can reflect several different possibilities. By aligning Maryland law with current scientific standards, this bill protects the integrity of forensic practice, supports just outcomes in our courts, and strengthens public confidence in the fairness and reliability of our system.

Attachments:

- Letter from Dr. Gregory Davis, MD, FCAP Forensic Pathologist, Former Associate Chief Medical Examiner, Commonwealth of Kentucky

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March 2, 2026

The Honorable Lesley Lopez
Maryland General Assembly
via email only

Dear Delegate Lopez:

I am a physician licensed to practice medicine in Kentucky, Indiana, and North Carolina. I am in the full-time practice of forensic pathology and am Professor emeritus and former Director of the Forensic Consultation Service of the Department of Pathology and Laboratory Medicine and Professor emeritus in the Department of Toxicology and Cancer Biology in the University of Kentucky College of Medicine as well as *pro bono* Consultant to the Lexington Veterans Administration Medical Center. I am formerly Associate Director of the UK HealthCare Autopsy Service and am formerly Associate Chief Medical Examiner of the Commonwealth of Kentucky. I have also served as chair of the Forensic Pathology Committee of the College of American Pathologists and on the Forensic Test Committee of the American Board of Pathology and currently serve on the Editorial Boards of *Forensic Science, Medicine, and Pathology*; *Journal of Forensic Sciences*; *Canadian Forensic Sciences Journal*; *Archives of Pathology and Laboratory Medicine*; and *The Pharos*. I am certified by the American Board of Pathology in Anatomic Pathology, Clinical Pathology, and Forensic Pathology, and I have testified as an expert in forensic medicine, pathology, and toxicology in numerous State Courts in Kentucky, Maryland, Tennessee, Indiana, Ohio, Virginia, West Virginia, Missouri, North Carolina, South Carolina, Alabama, Florida, Michigan, Iowa, Minnesota, New York, New Jersey, Colorado, California, Wisconsin, North Dakota, Montana, Oregon, New Mexico, and Pennsylvania as well as in United States Federal Court and the Republic of Singapore.

It is generally accepted in the forensic medicine and pathology community that a “float test” of the lungs is *invalid* in unattended births as a means of determining live versus stillbirth. Saukko and Knight¹ note that:

There are too many recorded instances when control tests have shown that stillborn lungs may float and the lungs from undoubtedly live-born infants have sunk, to allow it to be used in testimony in a criminal trial. Even one such failure negates the whole history of the test and the authors are saddened to contemplate the number of innocent women who were sent to the gallows in previous centuries on the testimony of doctors who had an uncritical faith in this

crude technique. As this is such an important issue and one that is still contested today, the words of the late Professor Polson may be recalled from his notable textbook [Polson CJ, Gee D, Knight B. 1985. *Essentials of Forensic Medicine*, 4th ed. Pergamon Press, Oxford]:

The test was suspect even in 1900 and requires not detailed discussion, because it is now known to have no value. The lungs of the live-born, even those who have been known to live for days, may sink [Dilworth 1900; Randolph 1901] and those which float are not necessarily those of live-born infants.... It is therefore pointless to apply the hydrostatic test [float test], which will impair the material for other and more important investigations.

Keeling² likewise notes that:

The use of the property of lungs to float in water (or buffered formalin) as a determinant of live birth is fraught with difficulty. It is unwise to rely on it as the only determinant of live birth even when some or any of the published modifications, which allegedly improve reliability, are introduced. It may be falsely positive because of putrefaction, even to a minor degree. [...] The value of the flotation test is negated by mouth-to-mouth or other positive-pressure ventilation.

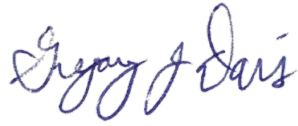
Air can easily be introduced into the respiratory system of a dead fetus, as noted by Saukko and Knight, who state, "Even ordinary handling of the dead fetus may aspirate air into the lungs."³ In most investigations, the autopsy pathologist appears not to know or document how witnesses, first responders, the body transport service, or individuals within the Medical Examiner's Office handled the body of the decedent.

Just this year, the National Association of Medical Examiners published a position paper on the investigation and certification of fetal demise, stillborn, and early neonatal deaths in which they state that it is **not** possible to assess the confidence intervals and relatively specificity and sensitivity of the "float test" and that therefore it is reasonable to conclude that the float test is **not** a test but an autopsy finding. They go on to say that it is **not** a diagnostic tool able to stand on its own as the sole determinant of whether an infant is liveborn or stillborn.

As Adelson⁴ stated over 50 years ago, a statement still true today:

Complete gross autopsy and painstaking microscopic studies do not always give satisfactory answers as to cause or mechanism of death in many stillbirths and neonatal deaths which occurred with competent medical attention. Even more insurmountable can be the problems faced by the pathologist who examines a child whose antenatal, intranatal, and neonatal courses were not witnessed by any person willing or able to tell what transpired.

Respectfully yours,



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Former Associate Chief Medical Examiner, Commonwealth of Kentucky

1. Saukko P, Knight B. *Knight's Forensic Pathology*, 4th ed. Boca Raton, FL: CRC Press; 2016: 455.
2. Keeling JW. Fetal and perinatal death. In: Busuttill A, Keeling JW, eds. *Paediatric Forensic Medicine and Pathology*. London: Hodder Arnold; 2009: 185.
3. Saukko and Knight, 456.
4. Adelson, L. *The Pathology of Homicide: A Vade Mecum for the Pathologist, Prosecutor and Defense Counsel*. Springfield, IL: Charles C. Thomas; 1974: 632.